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# URBANIZATION AND SUBURBANIZATION IN URBAN REGIONS OF PRAGUE AND VIENNA

*Summary of the PhD Thesis*

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## **INTRODUCTION**

This PhD thesis is focused on study of urbanization and urbanization processes in urban regions of Prague and Vienna. The thesis has two major parts. In the first part, general approaches to urbanization and suburbanization research are introduced and results of an analysis of Prague and Vienna urban regions are summarized. The second part consists of six published or submitted papers analyzing spatial distribution of population, housing, new housing construction in Prague urban region as well as comparing urbanization in Prague and Vienna urban regions in 1980s and 1990s.

In the introductory chapter, I focus of the thesis and development of my approach to research on suburbanization within the post-socialist urban development context. Chapter on general perspectives summarizes the state of art in the field and shows the application of such approaches on the case of Prague and Vienna. The last chapter focuses on comparison between Prague and Vienna, stressing different historical and political-economic causes of the development in these cities and urban regions.

During my study of urbanization in urban regions of Prague and Vienna, I used four approaches on how to understand urbanization, suburbanization and other urban processes. The first approach classifies the form of urbanization according to changes in structure of the region during the process. This level of analysis was used as a basis for comparative analysis of Prague and Vienna urban regions. The second approach sees urbanization and suburbanization as processes, which are going on in the urban region simultaneously. I used the perspective mainly for the study of the spatial distribution of new housing construction, and population respectively. Similarly, to the first approach growth of the core and the hinterland is examined. Unlike the structural assessment, which classifies to one form of urbanization, the second approach looks on absolute and relative growth of both part of the region and their share on total growth. The third approach looks on spatial patterns of metropolitan regions, based on morphology of built-up areas. This approach was used for an analysis of new housing construction. Forth approach stress migration as an explanatory factor influencing urban processes.

General approaches are used in the research of urbanization and suburbanization processes in urban regions of Prague and Vienna in the period of 1980-2006.

The final chapter on comparison of both urban regions in 1980-2002 summarizes the research and adds some new information, which could not be included in the published papers. Historical introduction shows the conditions of differences and similarities between

studied cities. After that, both cities are introduced as a part of respective national settlement system of Czechia and Austria. Selected results of comparative analysis are presented together with political-economic explanation of conditions of urbanization process. The aim of the thesis is to show several complementary levels of comparison. The thesis shows how a city is developing during its transformation from socialist to post-socialist city, compared to continual development of a capitalist city.

After the first major part, the selection of six published or submitted papers follows. First two studies (Posová 2004a, 2004b) are an example of my early work on urbanization and suburbanization. They are focused on evaluation of population and housing distribution in Prague urban region. To date of origin, third and fourth works (Ouředníček, Posová 2006; Sýkora, Posová 2007) exemplify my research on new housing construction as an important factor, which decides on suburban development in Prague urban region. The fifth and sixth papers originated in recent period (Posová, Sýkora 2010; Sýkora, Posová 2010). Based on my experience, gained during my stay at the University of Vienna, these papers compare urbanization in Prague and Vienna in 1980s and 1990s.

All papers analyze and assess changes in spatial distribution of housing in the urban regions. In four of them, both changes in housing and population are studied (Posová 2004a, 2004b; Posová, Sýkora 2010; Sýkora, Posová 2010). All papers focus on Prague urban region, the last two focus on comparison between Prague and Vienna, which is the key part of the PhD thesis. Three papers are focused on the period 1980-2001 (Posová 2004b; Posová, Sýkora 2010; Sýkora, Posová 2010), thus comparing two decennial periods before and after the fall of the Iron Curtain respectively urbanization of communist and post-communist city. Final two papers compare urbanization in the city within market economy with the urbanization of a city under totalitarian political system and centrally planned economy. A capitalist city is confronted with a city which is in the process of adaptation to capitalist principles. Based on Hampl (2005), socialist period is a special „defect“ of societal development (and its geographical organization) and the following period is a return period towards its „natural“ trajectory. Relatively stable development of Vienna may suggest how the development of Prague could look like. Other papers are focused on the period of transformation. Both absolute and relative indicators were used to assess the variety of situations and in particular to identify such case, in which absolute and relative indicators give different picture of the change in urban regions.

# **STRUCTURE OF THE PHD THESIS**

## **PART I: Urbanization and suburbanization in urban regions of Prague and Vienna: approaches to research and examples of results**

### **1 INTRODUCTION**

### **2 DEVELOPMENT OF URBANIZATION AND SUBURBANIZATION STUDIES**

- 2.1 Suburbanization in context of changes in internal spatial structure of Prague
- 2.2 Residential suburbanization in a post-socialist city: new housing construction in Prague urban region
  - 2.2.1 Origins and development of suburbanization in Prague
  - 2.2.2 Suburbanization or urbanization?
- 2.3 Urbanization and suburbanization: comparative analysis of Prague and Vienna urban regions
- 2.4 Delimitation of studied area: core and hinterland of urban regions

### **3 GENERAL PERSPECTIVES AND EXAMPLES OF RESULTS**

- 3.1 First approach: Structural assessment of forms of urbanization in the whole urban region
  - 3.1.1 Model of stages of urban development
  - 3.1.2 Classification of forms of urbanization
- 3.2 Second approach: Urbanization processes in urban regions
- 3.3 Third approach: Spatial pattern of metropolitan area
- 3.4 Fourth approach: Migration within, in and out of urban region

### **4 COMPARISON OF PRAGUE AND VIENNA**

- 4.1 Historical background
- 4.2 Position of urban regions in national settlement systems
- 4.3 Comparative analysis of Prague and Vienna urban regions

### **5 SUMMARY**

### **6 LITERATURE AND OTHER SOURCES**

- 6.1 Literature
- 6.2 Other sources

### **7 LIST OF TABLES, PICTURES AND APPENDIX**

### **8 APPENDIX**

## **PART II: Collection of published or submitted papers**

### **A CHANGES IN SPATIAL DISTRIBUTION OF POPULATION AND HOUSING IN PRAGUE URBAN REGION**

POSOVÁ, D. (2004a): Změny v prostorovém rozmístění obyvatelstva a bydlení v metropolitní oblasti Prahy. In: Balej, M., Jeřábek, M. (eds): Geografický pohled na současné Česko. Acta Universitatis Purkynianae 100. Studia Geographica VI. Univerzita J. E. Purkyně, Ústí nad Labem, pp. 61-72. ISBN 80-7044-577-7.

POSOVÁ, D. (2004b): Změny v prostorovém rozmístění trvalého bydlení a obyvatelstva v Praze: období socialistického a postsocialistického města. In: Wahla, A. (ed.): Geografie a proměny poznání geografické reality. Sborník příspěvků z Mezinárodní geografické konference. Ostravská univerzita, Ostrava, pp. 238-253. ISBN 80-7042-788-4.

### **B RESIDENTIAL SUBURBANIZATION IN POST-SOCIALIST CITY: NEW HOUSING CONSTRUCTION IN PRAGUE URBAN REGION**

OUŘEDNÍČEK, M., POSOVÁ, D. (2006): Suburbánní bydlení v Pražském městském regionu: etapy vývoje a prostorové rozmístění. In: Ouředníček, M. (ed.): Sociální geografie Pražského městského regionu. Univerzita Karlova, Přírodovědecká fakulta, katedra sociální geografie a regionálního rozvoje, Praha, pp. 96-113. ISBN 80-86561-94-1.

SÝKORA, L., POSOVÁ, D. (2007): Specifika suburbanizace v postsocialistickém kontextu: nová bytová výstavba v metropolitní oblasti Prahy 1997-2005. Geografie - Sborník České geografické společnosti, 112, No. 3, pp. 334-356. ISSN 1212-0014.

### **C URBANIZATION A SUBURBANIZATION: COMPARATIVE ANALYSIS OF PRAGUE AND VIENNA URBAN REGIONS**

SÝKORA, L., POSOVÁ, D. (2010): Formy urbanizace: kritické zhodnocení modelu stadií vývoje měst a návrh alternativní metody klasifikace forem urbanizace. Geografie - Sborník České geografické společnosti (submitted paper).

POSOVÁ, D., SÝKORA, L. (2010): Urbanizace a suburbanizace v městských regionech Prahy a Vídně: strukturální rozdíly v podmínkách odlišných politicko-ekonomických režimů. Geografie - Sborník České geografické společnosti (submitted paper).

### **DEVELOPMENT OF URBANIZATION AND SUBURBANIZATION STUDIES**

In my early papers (Posová 2004a, 2004b), I was inspired by work of my supervisor L. Sýkora and his colleague M. Ouředníček (e.g. Sýkora 2001b; Ouředníček, Sýkora 2002; Sýkora 2002). In particular, I was interested in studies on theoretical and methodological aspects of geographical research of urban spatial structure (Matlovič 1998, Sýkora 2001a). The results of recent population and housing census were up-to-date object of interest (Sčítání lidu, domů a bytů 2001), which led me to work on empirical analysis of Prague urban region. While the first paper showed that suburbanization is going on by analyzing changes in spatial

distribution of population and permanently occupied dwellings in Prague urban region (Posová 2004a), the other one identified the most significant changes in spatial distribution of population and housing in Prague under socialism and post-socialism (Posová 2004b). Also this view „the other way around“ showed the ongoing process of suburbanization.

In the middle of my studies, I focused on changes of physical structures of the city in general and on new housing construction as a process of urban change in particular. I asked the question of what is the role of housing construction for geographical organization of metropolitan area. Housing construction is a partial but important factor influencing complex geographical structure of metropolitan area. Analysis of housing construction contributes to overall picture of suburbanization.

The next paper, and the first one I was cooperating on with another author (Ouředníček, Posová 2006), is even more focused on suburban area. Together with M. Ouředníček we had two goals: (1) to delimitate the phases of suburban construction and explain the cause why localities of residential suburbanization appear during the period of transformation and (2) evaluate the spatial distribution of new suburban residential construction.

About a year and half later, I worked on another paper, which analyzes and evaluates Prague urban region with the help of data about new housing construction, but this time with another perspective. The aim of the paper was to describe and evaluate differential growth within Prague urban region using this data and thus contribute to the study of suburbanization (Sýkora, Posová 2007). Unlike in the previous paper, together with L. Sýkora we focused on comparison between the core and the hinterland. We widened the existing knowledge on suburbanization in post-socialist cities by emphasis absolute growth in respective part of the urban region, since previous studies only worked with relative growth/decline rates (Sýkora, Posová 2007).

In the final stage of my studies, I rehabilitated my original idea to compare Prague and Vienna. My foreign supervisor W. Matznetter works on comparative analysis of Vienna and Bratislava urban regions (Matznetter 2004; Matznetter, Nitsch, Wisbauer 2004). Both W. Matznetter and P. Dostál came with interesting questions in this field of comparison of Prague and Vienna urban regions. Matznetter used the model of stages of urban development (van den Berg et al. 1982) and classifies Bratislava urban region to desurbanization stage in 1991-2001. Many studies on suburbanization of Prague since 1990s appeared. The article from Sýkora and Posová (2007) showed two alternatives of growth within the urban region, showing that suburbanization is an important way of growth, but neither the only one nor the

largest one. For the same period of 1990s and 2000s, terms like urbanization, suburbanization, desurbanization are used in connection with Prague and Bratislava urban regions in various contexts. Original formulations presented in van den Berg et al. (1982) examine again as a theoretical methodological basis for my PhD thesis.

I presented the comparison of urbanization and suburbanization in Prague and Vienna urban regions together with my supervisor L. Sýkora in two interrelated papers (Posová, Sýkora 2010; Sýkora, Posová 2010). One paper aims to show the differences of urbanization process in formerly communist (now post-communist) city and in contemporary capitalist city. Urbanization and suburbanization trends in Prague and Vienna urban regions are analyzed, compared and discussed (Posová, Sýkora 2010).

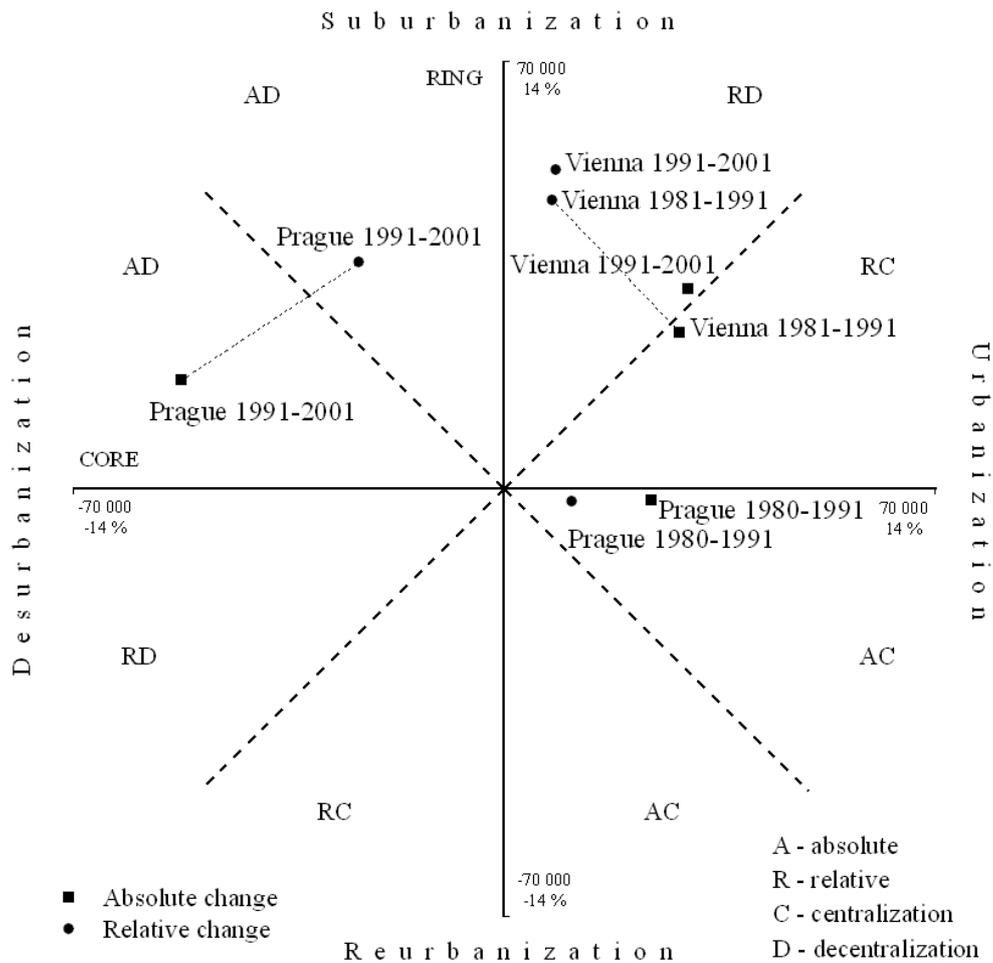
Originally, inspired by my consulting supervisor W. Matznetter (Matznetter 2004; Matznetter, Nitsch, Wisbauer 2004), the model of stages of urban development (van den Berg et al. 1982) became a theoretical and methodological basis for my comparative analysis. When used for absolute and relative data in Prague and Vienna urban regions, the model gave different results. Therefore, some imperfect formulations and other shortcomings of model of stages of urban development (van den Berg et al. 1982) were showed in a paper together with comparison of Prague and Vienna (Sýkora, Posová 2010).

## **GENERAL PERSPECTIVES AND EXAMPLES OF RESULTS**

The chapter „General perspectives and selected results“ attempts to explain the main issues and complexity of urbanization and suburbanization assessment. General perspectives were exemplified on selected analytical results.

(1) Empirical analysis of Prague and Vienna urban regions, based on model of stages of urban development (van den Berg et al. 1982) discovered that van den Berg's method leads in some situations to different results (fig. 1). I discussed these differences with my supervisor L. Sýkora and this discussion leads to ours common paper (Sýkora, Posová 2010). We focused on why in some cases the results are different (fig. 1; Prague 1991-2001, Vienna 1981-1991) and why in other cases it „works“. If we use relative measures in the case of Prague the result (growth of the region) does not correspond with the reality (decline of the region by 2,54 %). In Vienna 1981-1991, if we use absolute and relative values the results are urbanization as well as suburbanization (centralization as well as decentralization). These confusing results may appear if the size of the core is much different from the size of the hinterland.

Fig. 1: Prague and Vienna in the model of classification of urban development types



Source: Sčítání lidu, domů a bytů 1981, 1991, 2001; Volkszählung 1981, 1991, 2001 [Population census]; Sýkora, Posová 2010

Detailed study of van den Berg's et al. work (1982) and other authors (Hall a Hay 1980; Gaebe 1987; Cheshire 1995; Osada 2003) inspired us to an alternative method of classification of the forms of urbanization (tab. 1). This method distinguishes between urbanization, suburbanization, desurbanization and reurbanization according to two indicators: (1) growth/decline of the total functional urban region, (2) centralization or decentralization within the region (table 1). The results for Prague and Vienna are in table 2.

Table 1: Classification of forms of urbanization

	Centralization (growing share of core)	Decentralization (growing share of ring)
Growth of city region	urbanization	suburbanization
Decline of city region	reurbanization	desurbanization

Source: Sýkora, Posová 2010

Table 2: Forms of urbanization in Prague and Vienna urban regions

	Population		Dwellings	
	Form of urbanization process	Centralization/ decentralization	Form of urbanization process	Centralization/ decentralization
Prague 1980-1991	Urbanization	Absolute centralization	Urbanization	Relative centralization
Prague 1991-2001	Desurbanization	Absolute decentralization	Suburbanization	Absolute decentralization
Vienna 1981-1991	Suburbanization	Relative decentralization	Suburbanization	Relative decentralization
Vienna 1991-2001	Suburbanization	Relative decentralization	Suburbanization	Relative decentralization

Source: updated from Sýkora, Posová 2010 and Posová, Sýkora 2010

(2) The second approach is focused on understanding of all urbanization processes, which can go on simultaneously in the same urban region. Urbanization or suburbanization can happen if population or other activities (housing, retail, logistics, production) are being newly located within the core (urbanization) or in the hinterland (suburbanization) (Gaebe 1987, Friedrichs 1995, Sýkora 2003). Suburbanization includes both relocations and new creations of households or companies out of the core, if they still keep close functional relation with the core city (Gaebe 1987). The analysis showed that urbanization of the core and suburbanization of the hinterland are two faces of urban changes in Vienna during the whole period of investigation. The same is true for Prague after 1997. Within the urban regions, relative growth is higher in the hinterland, which also means that the share of hinterland is increasing. However, absolute amount of newly constructed dwelling is higher in the core than in the suburban zone.

(3) Assessment of spatial pattern is based on some characteristics of morphological structure of metropolitan areas (e.g. Galster et al. 2001). Inspired by Galster et al. (2001), I and my supervisor L. Sýkora and I wrote a paper focused on if the new housing construction is stretching out from the centre towards the border of urban regions and if there are some differences between new construction according to the distance from the centre (Sýkora, Posová 2007). What is the average distance of the newly constructed dwellings from the centre of Prague urban region? According to our results, decentralization did not occur

Fig. 2: Urban region of Prague: 5 km concentric zones

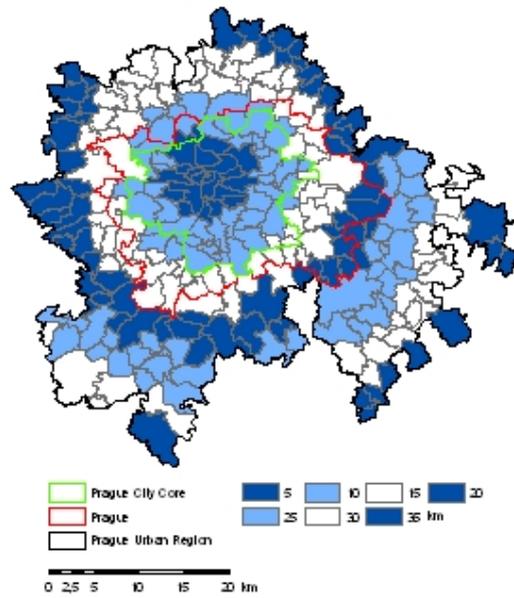
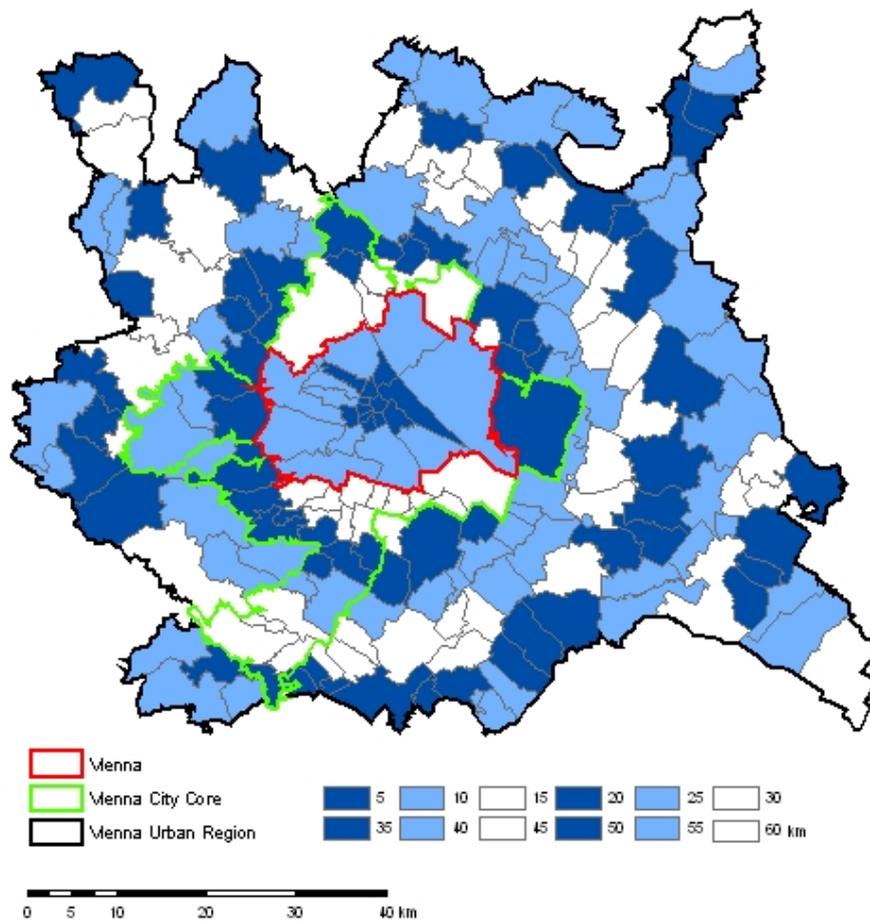


Fig. 3: Urban region of Vienna: 5 km concentric zones



between 1997-2006 in the case of new housing construction in urban region of Prague. Similar results were found for Vienna. Urban region of Vienna is stretched up to 55-60 km from the city (fig. 3). Similar region for Prague is stretched only up to 35 km from the city centre (fig. 2). An increasing level of decentralization has not been confirmed as the growth has not been faster in more distant zones neither in Prague nor in Vienna.

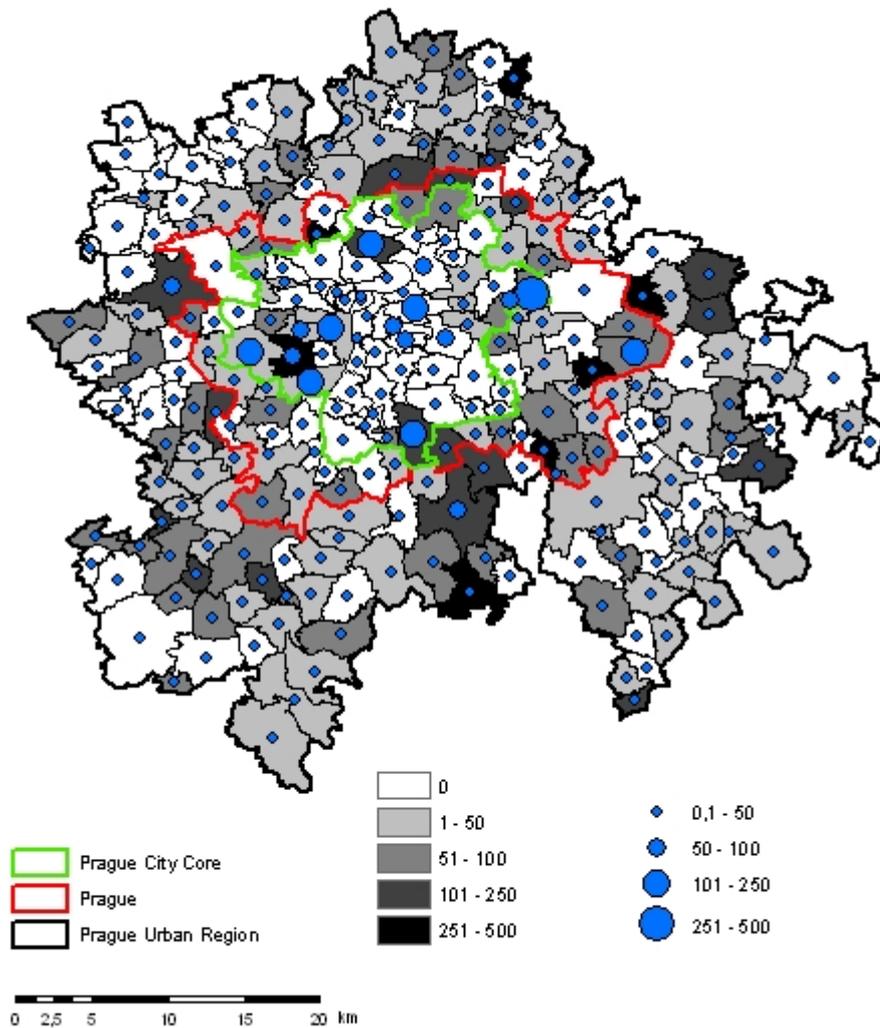
(4) Urbanization processes are often discussed together with migration. Some authors define suburbanization through migration (e.g. Ouředníček 2003, 2005, 2008, Tammaru et al. 2009). Majority of suburban change is caused by migration. Despite some notes on migration between the core and the hinterland of Prague urban region in one of my early works (Posová 2004a) I do not develop this line of investigation much further. I understand migration as a supplementary characteristic but not as a way, how to define suburbanization.

## **COMPARISON OF PRAGUE AND VIENNA**

Comparative analysis of two urban regions should consider the context and development of respective national settlement systems in this case we need to look at the importance of Prague in Czech and Vienna for Austrian settlement system respectively. Process of metropolization (Hampl, Gardavský, Kühnl 1987; Hampl et al. 1996; Hampl 2005) as the growth of the share of metropolitan region on the national system was confirmed only in the case of Prague 1980-1991. In the period of 1991 a 2001, Prague's share on national system was decreasing. These results are in contrast with significant growth of Prague's importance as a mezoregional center in the same period (Hampl 2005).

The other question follows: where does the largest amount of newly built dwellings concentrate? Concentration of new housing construction in particular districts of Prague and Vienna and surroundings is showed in fig. 4 and 5.

Fig. 4: Number of completed dwellings and the intensity of housing construction in Prague urban region in 1997-2002

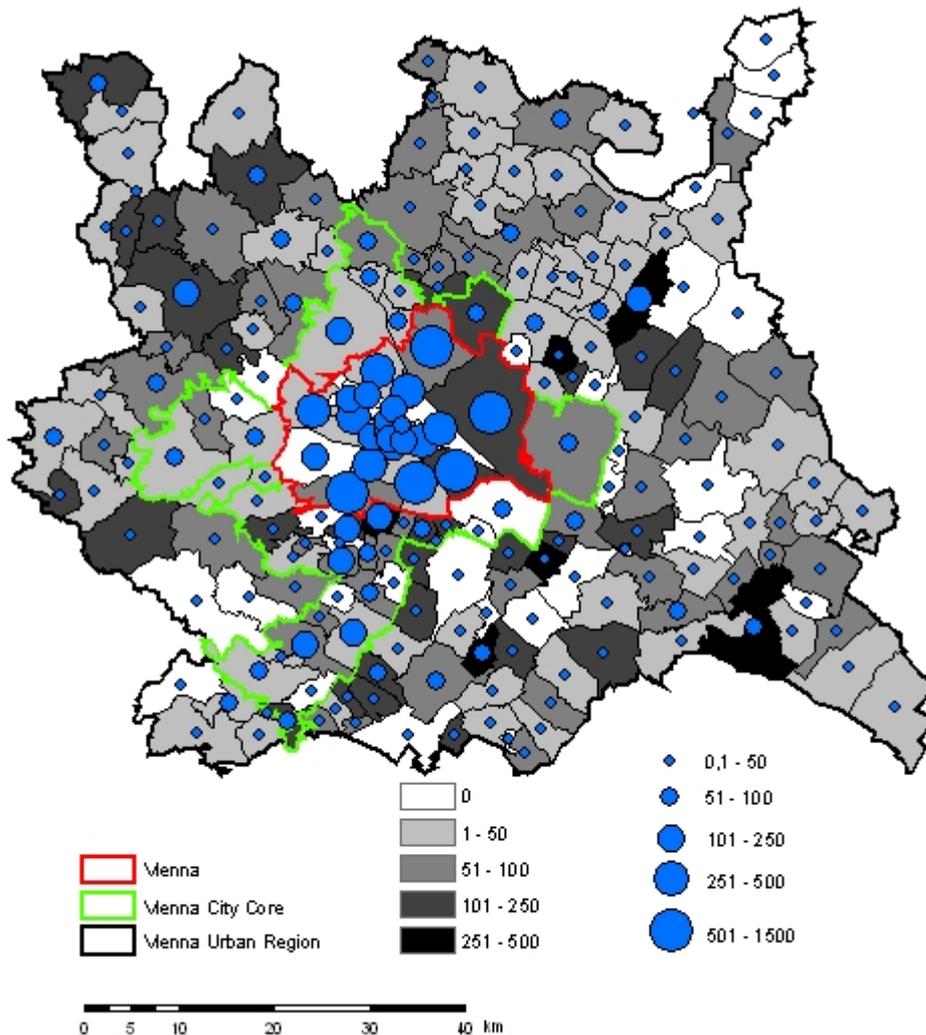


Legend: color: intensity of housing construction (per 10 000 inhabitants); circle: average annual number of completed dwellings

Source: Bytová výstavba 1997-2002 [Housing construction]

During 1980s, new construction in Prague was concentrated in large housing estates. Urbanization was a preferred way of development according to governmental investments. Governmental regulations, e.g. so called central system of settlement, minimized new construction in suburban area. After 1989, previously started projects of so called complex housing construction are finished within the compact city (Sýkora 2004). Mainly after 1997 when financing of housing construction by mortgages became possible, suburbanization is slowly developing at the border of compact city and hinterland in places like Jesenice, Hostivice and many others (fig. 4). In the compact city are constructed condominiums like Jinonice.

Fig. 5: Number of completed dwellings and the intensity of housing construction in Vienna urban region 1997-2002



Legend: color: intensity of housing construction (per 10 000 inhabitants); circle: average annual number of completed dwellings

Source: Wohnen 1997-1999, Wohnbautätigkeit 2000-2002 [Housing construction]

In Vienna, phases of expansion of the city were followed by period of urban regeneration and vice versa. New housing construction - mainly larger projects or residential parks - was located both in the city (e.g. Donaustadt) as well as in the hinterland (urbanization as well as suburbanization) (fig. 5). Old housing and brownfields were regenerated (e.g. Simmering). Social housing (municipal housing) - an important part of new construction - is under control of municipal government. Lichtenberger (1993a, 1993b, 1994, 1995) describes the system as municipal socialism.

Comparison of urbanization in Prague and Vienna 1980-2002 showed differences in spatial structures of urban regions. Vienna is a case of a city whose spatial structure is a result

of long-term continual development under capitalism. Prague is a case of dynamic reorganization caused during adaptation after revolutionary changes in basic rules of societal organization (Sýkora 2008). These differences were explained mainly by political economical cause of urban process.

Vienna is a model of continual development which was not influenced by principles of totalitarian societal system and centrally planned economy. Vienna represents continuous development. Vienna was developing within the context of welfare state with market orientation as a specific form of capitalism, so it cannot be understood as “all-capitalist city”. Population growth and housing construction is evident continuousness both in the core and in the hinterland. During the 20 years of investigation, approximately 50 % of population growth was located in the core and the rest in the hinterland, while two thirds of new dwellings were located in the core and one third in the hinterland. Relative changes of population are stable as well, with hinterland having approximately 10 % higher growth rates compared to the core during the whole period. Vienna urban region is experiencing a long term decentralization. Such stability is the most visible difference to Prague.

As a result of previous policy, the share of the core compact city on the total urban region is usually high in post-socialist context. The same is true for Vienna due to municipal housing construction. Higher absolute growth of population and housing in the core is contrasting with higher relative growth rates in the hinterland. Urbanization and suburbanization are the trends of contemporary changes. Such results are conditioned by initial large share of the core on the total urban region. The results would be much different in urban regions with long-term suburbanization processes and high share of hinterland on the total urban region (e.g. in the USA or Canada).

Prague is a model of socialist city before 1989 and of a post-socialist city after that. Prague is studied during its transformation from socialist to capitalist society, from socialist to capitalist principles. Period of socialism is often seen as an extraordinary „disturbance“ in the development of society and its geographical organization (Hampl 2005). Suburbanization during post-socialist period is thus a natural and desirable process. Transformation can be understood as a historically unique process in the sense of partial „corrective“ changes connected with the shift towards „natural“ trajectory of societal development. During socialism, the core of Prague was expanding and the hinterland was stagnating, during post-socialism the core is stagnating or even decreasing and the hinterland is growing. Unlike in Vienna, urban region of Prague is experiencing dynamic changes, which influence not only location of residential construction (Horáková 2000; Posová 2004a, 2004b; Ouředníček,

Posová 2006; Sýkora, Posová 2007). During socialism, dynamical changes in Prague were caused by construction of large housing estates in the core of the urban region, while in the post-socialist period dynamical changes are caused by individual new construction in the hinterland (Posová, Sýkora 2010).

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